

We claim:

1. An optical receiving unit for a wireless communications link, said optical receiving unit comprising:
a receiving unit including at least one objective optic element; and
an optical bundle operable to receive an optical signal, wherein said optical bundle is comprised of an array of optical fibers arranged surrounding a receiving fiber.

2. The optical receiving unit of claim 1, wherein said array is comprised of N fibers
10 and wherein N is selected to facilitate fabrication of said optical bundle.

3. The optical receiving unit of claim 1, wherein a core diameter and numerical aperture of said array of optical fibers are selected to capture as much light as possible.

15 4. The optical receiving unit of claim 1, wherein said receiving fiber is recessed relative to said array.

5. The optical receiving unit of claim 4, wherein said receiving fiber is recessed relative to said array by appending an extension bundle to said optical bundle to add additional 20 length to each of said fibers in said array.

6. The optical receiving unit of claim 5, wherein said extension bundle is comprised of an array of fibers arranged around a central fiber and said central fiber is then removed from the extension bundle.

25 7. The optical receiving unit of claim 4, wherein said receiving fiber is recessed relative to said array by appending a silica disk to said optical bundle.

8. The optical receiving unit of claim 7, wherein said silica disk has a hole in the 30 center and wherein an outer diameter of said silica disk is at least equal to the diameter of said

optical bundle and an inner diameter of said silica disk is approximately equal to the core diameter of said receiving fiber.

9. An optical receiving unit for a wireless communications link, said optical receiving unit comprising:

a receiving unit including at least one objective optic element; and

an optical bundle operable to receive an optical signal, wherein said optical bundle is comprised of an array of optical fibers arranged surrounding a receiving fiber, wherein said array of optical fibers detects a location of said signal relative to said receiving fiber and provides feedback to adjust an orientation of said receiving unit.

10. The optical receiving unit of claim 9, wherein said array is comprised of N fibers and wherein N is selected to facilitate fabrication of said optical bundle.

15. 11. The optical receiving unit of claim 9, wherein a core diameter and numerical aperture of said array of optical fibers are selected to capture as much light as possible.

12. The optical receiving unit of claim 9, wherein said receiving fiber is recessed relative to said array.

20 13. The optical receiving unit of claim 12, wherein said receiving fiber is recessed relative to said array by appending an extension bundle to said optical bundle to add additional length to each of said fibers in said array.

25 14. The optical receiving unit of claim 13, wherein said extension bundle is comprised of an array of fibers arranged around a central fiber and said central fiber is then removed from the extension bundle.

15. 30 The optical receiving unit of claim 12, wherein said receiving fiber is recessed relative to said array by appending a silica disk to said optical bundle.

16. The optical receiving unit of claim 15, wherein said silica disk has a hole in the center and wherein an outer diameter of said silica disk is at least equal to the diameter of said optical bundle and an inner diameter of said silica disk is approximately equal to the core
5 diameter of said receiving fiber.

17. A method of aligning an optical receiving unit with an optical transmitting unit in a wireless communications link, said method comprising:

receiving an optical signal using an optical bundle comprised of an array of
10 optical fibers arranged surrounding a receiving fiber;

measuring a signal strength of said optical signal in each fiber in said array of optical fibers and in said receiving fiber; and

repositioning said optical bundle to reduce the signal strength in said fibers in said array of optical fibers and to increase the signal strength in said receiving fiber.
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18. The method of claim 17, further comprising the step of recessing said receiving fiber relative to said array.

19. The method of claim 18, further comprising the step of appending an extension
20 bundle to said optical bundle to add additional length to each of said fibers in said array.

20. The method of claim 18, further comprising the step of appending a silica disk to said optical bundle.